Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Ag 84 Mr
# 394

LIBRARY
RECEIVED
NOV 9 1961
U. S. DEPARTMENT OF AGRICULTURE
BELTSVILLE BRANCH

Marketing Research Report No. 394

MARKETING AND PRICING

# PUERTO RICAN RAW SUGAR

U.S. Department of Agriculture
Agricultural Marketing Service
Marketing Economics Research Division

## PREFACE

This study of marketing practices and pricing methods used for Puerto Rican raw sugar marketed in the mainland United States was undertaken at the request of the Puerto Rican sugar industry. A part of this study was reported in Marketing Research Report No. 220, "Weight and Polarization Changes of Puerto Rican Raw Sugar in Storage and Shipment." This work is part of a broad program of research designed to reduce marketing costs and increase efficiency in the marketing of farm products.

C. B. Gilliland directed this study and assisted in the collection of data from the Puerto Rican raw sugar mills. The data used were the latest available for research use; it is generally believed that conditions had not changed materially through 1959.

The cooperation and assistance of the officers and members of the Association of Sugar Producers of Puerto Rico contributed materially to the study.

Washington, D. C. April 1960

For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 25 cents

CONTENTS


| | Page |
|---|---|
| Summary | 5 |
| The problem | 7 |
| Objectives and procedure | 8 |
| Marketing Puerto Rican sugar | 9 |
| Marketing colonos' sugar | 9 |
| Production, storage, and delivery of raw sugar | 10 |
| Marketing channels | 14 |
| The raw sugar market | 15 |
| Characteristics of the market | 15 |
| Influence of ocean freight rates on markets used | 16 |
| Regulation of the sugar industry | 17 |
| Pricing Puerto Rican raw sugar | 18 |
| Pricing on the spot market | 18 |
| Average pricing | 19 |
| Length of price periods | 20 |
| Raw sugar prices | 22 |
| The spot raw sugar price quotation | 22 |
| Fluctuations of the daily spot raw sugar quotation | 24 |
| Range of the price changes | 24 |
| Seasonality of prices | 25 |
| Daily sales of raw sugar | 27 |
| Volume of sales | 27 |
| Average of quotation and transaction prices | 31 |
| Raw sugar sales and price moves | 31 |
| Prices received for Puerto Rican raw sugar | 33 |
| "Distress" raw sugar | 36 |
| Prevalence and reasons for distress raw sugar sales | 36 |
| Influence of distress sugar sales on prices | 39 |

SUMMARY

Since 1953 there have been wide shifts in the practices of Puerto Rican mills in pricing and marketing raw sugar. The volume of sales by raw sugar mills to "operators"--individuals who buy from mills and sell to refiners--increased from 34 percent in 1953 to 54 percent in 1957. Sales by mills directly to refiners showed a corresponding decline.

Increasingly, raw sugar mills are selling sugar on the basis of average prices--in many cases, an average covering a period as long as 12 months--rather than on the spot market price on the day of sale. The volume of Puerto Rican raw sugar sold on an average-price basis increased from 33 percent of total sales in 1953 to 85 percent in 1956, although a decline to 55 percent was recorded in 1957.

Operators have usually purchased at average prices, although in 1956 and 1957 they purchased considerable quantities at spot prices. Approximately two-thirds of the average-price sales to operators were made to one operator in 1957, as compared to about one-third in 1953. Refiners increased their purchases of Puerto Rican sugar at average prices from only 9 percent of their total purchases in 1953 to 44 percent in 1957.

Raw sugar mills frequently are able to obtain slightly higher prices for sugar sold on the spot market than for sugar sold on an average basis. This does not necessarily mean they receive higher net returns, as sales on the spot market may involve higher selling costs.

For mills that sell at spot market prices, the seasonal and daily moves of the raw sugar price are important. Raw sugar prices during the period studied were generally higher during the summer, when refined sugar consumption is relatively high. Prices generally were lowest in December, January, and February.

On two-thirds of the days from 1953 through 1957, the quotation did not change from the preceding day. The quotation seldom changed more than 5 points, but a change of 5 points was recorded on 11 percent of the days (a point is 1 cent per hundredweight).

Raw sugar sales tend to be bunched throughout the year. Approximately 40 percent of the raw sugar was sold on about 10 percent of the days, and there were no known sales on one-third of the days. A weighted average of the daily quotations, based on the volume of sales rather than a simple average, therefore is more representative of prices at which sugar is sold. Use of the weight average would discourage attempts to influence daily quotations and average prices by sales of small quantities of sugar at times when no other sugar is being sold in the market.

Selling raw sugar on an average-price basis may affect the price-making process for raw sugar, regardless of whether sales are to refiners or operators. Sales to refiners on an average-price basis remove that volume of sugar from the price-making process and leave a smaller volume of sugar directly involved in the establishment of prices. Sales to operators on an average-price basis

concentrate a large volume in the hands of a small number of operators whose interest may not be the same as that of the raw sugar mills. The marginal quantities of raw sugar that may be demanded or supplied may have more influence on short-run price moves, however, than the total supply or demand. The total supply is controlled for each year under provisions of the U. S. Sugar Act, although the quotas established under this act are subject to revision during the year. This flexibility dampens price variations that might otherwise occur, particularly when the sugar holdings of particular operators become large.

Some shipments of "distress" raw sugar, or sugar aboard ships in or nearing port that has not been sold to a refiner, appear to have a moderately depressing effect on raw sugar prices; however, an analysis of prices before the sale, on the day of sale, and the day after sale failed to show a significant effect of these shipments on price. Most of these shipments were of Philippine origin. The number of sales of distress raw sugar increased substantially from 1953 to 1957. The distance this sugar is shipped and the uncertainty as to time of arrival appear to be the chief reasons for selling after the sugar nears or reaches port.

# MARKETING AND PRICING PUERTO RICAN RAW SUGAR

By Robert G. Martin and O. C. Hester, agricultural economists,
Marketing Economics Research Division
Agricultural Marketing Service

## THE PROBLEM

The marketing of raw sugar is of vital concern to Puerto Rico. Sugar and other sugarcane products account for more than half of the island's outshipments. In the 5-year period 1953-57, an average of 1,138,000 tons of raw sugar were produced in Puerto Rico, with an average value of $139,157,000 (table 1). More than 93 percent of the sugar was shipped to the continental U. S. market, the rest going into the local market except for 1953 when 70,000 tons were exported abroad. More than 90 percent is shipped out in the form of raw sugar for further processing by mainland refineries.

Table 1.--Production, shipments, local sales, and carryover of sugar in Puerto Rico, 1953-57 1/

| Year | Production (raw) | Shipments to continental U.S. | | Local market sales | | Other sales (raw) | Actual carryover on Dec. 31 (raw and refined) |
|---|---|---|---|---|---|---|---|
| | | Raw | Refined | Raw | Refined | | |
| | 6,000 tons | 1,000 tons | 1,000 tons | 1,000 tons | 1,000 tons | 1,000 tons | 1,000 tons |
| 1953 | 1,181 | 991 | 125 | 8 | 84 | 70 | 148 |
| 1954 | 1,203 | 957 | 125 | 8 | 96 | 0 | 157 |
| 1955 | 1,165 | 954 | 125 | 9 | 89 | 0 | 142 |
| 1956 | 1,151 | 1,009 | 131 | 9 | 92 | 0 | 44 |
| 1957 | 990 | 782 | 131 | 9 | 99 | 0 | 6 |

1/ Short tons, raw value.
Source: Manual of Sugar Statistics, Association of Sugar Producers of Puerto Rico, 1957.

There were 32 centrals, or raw sugar mills, in operation in Puerto Rico in 1957, owned by 22 firms. These firms process sugarcane produced by more than 17,000 farmers or colonos, and market the raw sugar produced from it. 1/

The raw sugar mills receive a share of the sugar produced from processing sugarcane. The colonos may take their sugar and market it themselves; however, most sell it to the mills, which market it.

1/ Colonos are sugarcane farmers. Centrals process the sugarcane into raw sugar and are referred to as raw sugar mills.

The centrals must select, among several alternatives, the method of marketing their sugar which will yield the greatest net return. They may sell sugar to refiners through their own sales organizations or through brokers, or sell to "operators" who in turn sell to refiners. They also have the choice of selling at committed (agreed-upon) spot market prices or average prices.

The essential difference between the two methods of selling is that the raw sugar mill operator knows at the time of sale what price he will receive when he sells at a committed price. The price is arrived at by negotiation, and the level depends on market conditions and current bids and offers in the market. Average-price sales are based on the average of the daily New York spot quotations for some period agreed upon between buyer and seller, and the price at which the sale takes place cannot be determined until the end of the average-price period. Wide price fluctuations are minimized by the average-price method of selling. In average-price sales, partial payment is made at the time of delivery, with an adjustment shortly after the average-price period ends.

Only two Puerto Rican firms have maintained their own sales offices in New York. The other firms use brokers or sell to operators. In recent years, operators have played an important role in the marketing of Puerto Rican raw sugar.

Basic to the problems of the mills in marketing raw sugar is the practice of paying an average price to growers for raw sugar and selling in a fluctuating market. Mills stand to gain or lose on marketing their share of the sugar, as well as the sugar for which they pay the annual average price to the colonos. As processors the mills are primarily interested in earning a processing margin and would prefer to minimize inventory and price risk. The maintenance of a sales force is expensive to the individual firm. This service can apparently be carried out more economically by specialized firms handling a large volume from several mills.

Development of bulk handling and shipping, changes in the pricing period for paying colonos for their share of the sugar, and the increase in volume of sugar sold to operators created a need for information on the changed marketing methods and pricing practices.

## OBJECTIVES AND PROCEDURE

The objective of this study was to provide centrals with a basis for evaluating their practices and selecting the best method of marketing. The study was designed (1) to describe the market for Puerto Rican raw sugar and the economic forces in the market which influence the marketing and pricing practices of Puerto Rican raw sugar mills, (2) to analyze price formation in the raw sugar market and factors influencing the raw sugar price, (3) to examine alternative pricing methods and the use of the spot quotation in the average-price method of selling, and (4) to analyze raw sugar price fluctuations and compare market prices with prices received by Puerto Rican raw sugar mills under particular pricing methods.

Information for the study was obtained by personal interviews with Puerto Rican raw sugar producers and by questionnaires submitted to them concerning their marketing practices. Data were submitted by more than three-fourths of the Puerto Rican mills on their sales from 1953 to 1955, and more than one-half in 1956 and 1957 (table 2). Both large and small mills were included in the study. Information was obtained from the mills on each sale--the date of sale, tons sold, buyer, price received, and method of pricing. Some information on practices and problems in buying raw sugar was obtained from refiners. In addition, data collected and published by the Sugar Division of the Commodity Stabilization Service in the administration of the Sugar Act were used. Information on prices and sales was obtained from the market bulletins published by two commercial firms that report market conditions.

Table 2.--Shipment of raw sugar from all mills compared to mills studied, 1953-57

| Year | Sugar mills | | | Shipments of raw sugar to continental U. S. 1/ | | |
|---|---|---|---|---|---|---|
| | All mills | Sample mills | | All mills | Sample mills | |
| | | Number | Percent of total | | Amount | Percent of total |
| | Number | Number | Percent | 1,000 tons | 1,000 tons | Percent |
| 1953 | 34 | 26 | 76 | 965 | 685 | 71 |
| 1954 | 33 | 26 | 79 | 931 | 680 | 73 |
| 1955 | 33 | 26 | 79 | 927 | 724 | 78 |
| 1956 | 32 | 18 | 56 | 976 | 485 | 50 |
| 1957 | 32 | 17 | 53 | 761 | 415 | 55 |

1/ In short tons, 96° basis.

Source: Data on all mills from Manual of Sugar Statistics, Association of Sugar Producers of Puerto Rico, 1953-57.

## MARKETING PUERTO RICAN RAW SUGAR

### Marketing Colonos' Sugar

The conditions under which raw sugar is purchased from colonos by the centrals affects the way in which raw sugar is marketed. The purchase of sugar by centrals is regulated by the price determinations made by the U. S. Secretary of Agriculture in the administration of the Sugar Act and by Puerto Rican laws. The centrals receive a share of the sugar produced for grinding and processing the sugarcane. The colonos have a choice of receiving their share of the sugar or receiving its money value. Centrals receive for their services from 32.5 to 37 percent of the sugar, depending on the yield.

Settlement is usually made on a cash basis. About half the centrals settled on a cash basis, one-fourth settled on a raw sugar basis, and one-fourth settled on both cash and raw sugar basis. 2/ If the mill and colono settle on a cash basis, the mill takes title to the sugar but deducts the cost of marketing from the price it pays the colono. The price the mill pays the colono is an average price based upon a period fixed under authority of the Sugar Act of 1948. When the settlement is on a sugar basis, the mill usually acts as an agent in marketing the sugar for the colono. The volume of sugar owned by an individual colono is too small for him to find a buyer interested in that quantity, and it would be difficult to arrange shipment of a small quantity.

Before 1952, the cash value paid by mills to colonos was based on the average price during the period the cane was ground. The period was from about a week to a month, as agreed upon between the mill and the colonos. In 1952, the period was increased to the 10 months from January 1 to October 31 for quota sugar and from January 1 to October 31 of the following year for over-quota sugar. The following year, 1953, the average price period was changed to the 12 months from March 1 to February 28. This base remained in effect until 1958, when the base period was changed to the calendar year.

There has been greater risk to the mills in marketing since 1952 when the price period was lengthened. The price the centrals must pay colonos is not known until the end of the average-price period, yet they must sell the sugar at the prevailing price or on an average-price basis. Depending on the movement of the price during the year and their ability to predict price movements, the raw sugar producers may gain or lose by marketing the sugar they purchase from colonos on the average-price basis. When the final settlement could be made with the colonos shortly after the sugar was produced, the mills knew the cost of the sugar and the price at which they could sell it. Mill owners state that the 12-month average price is usually greater than the 1-week to 1-month average price they formerly paid to colonos, and this, plus rising labor and equipment costs, has narrowed the margin they can realize on producing raw sugar. Prices are usually somewhat lower during the Puerto Rican producing season. Some mills sell at average prices based on short periods of a month to 2 or 3 months, while others sell at 10- to 12-month average prices. If they both buy and sell at a 12-month average price, they do not lose or gain from price fluctuations in marketing colono sugar.

## Production, Storage, and Delivery of Raw Sugar

Raw sugar in Puerto Rico is produced largely in February, March, April, and May (fig. 1). Delivery of this sugar to the U. S. mainland market takes place in all months of the year. Deliveries varied considerably from month to month during the period studied, but there were no seasonal variations. Deliveries did not tend to be heavier during the production season than later in the year.

---

2/ The Marketing of Raw Sugar in Puerto Rico; Hernandez, Leslie, and Olmeda, Ramon Velez. Bulletin 147, University of Puerto Rico Agricultural Experiment Station, January 1959.

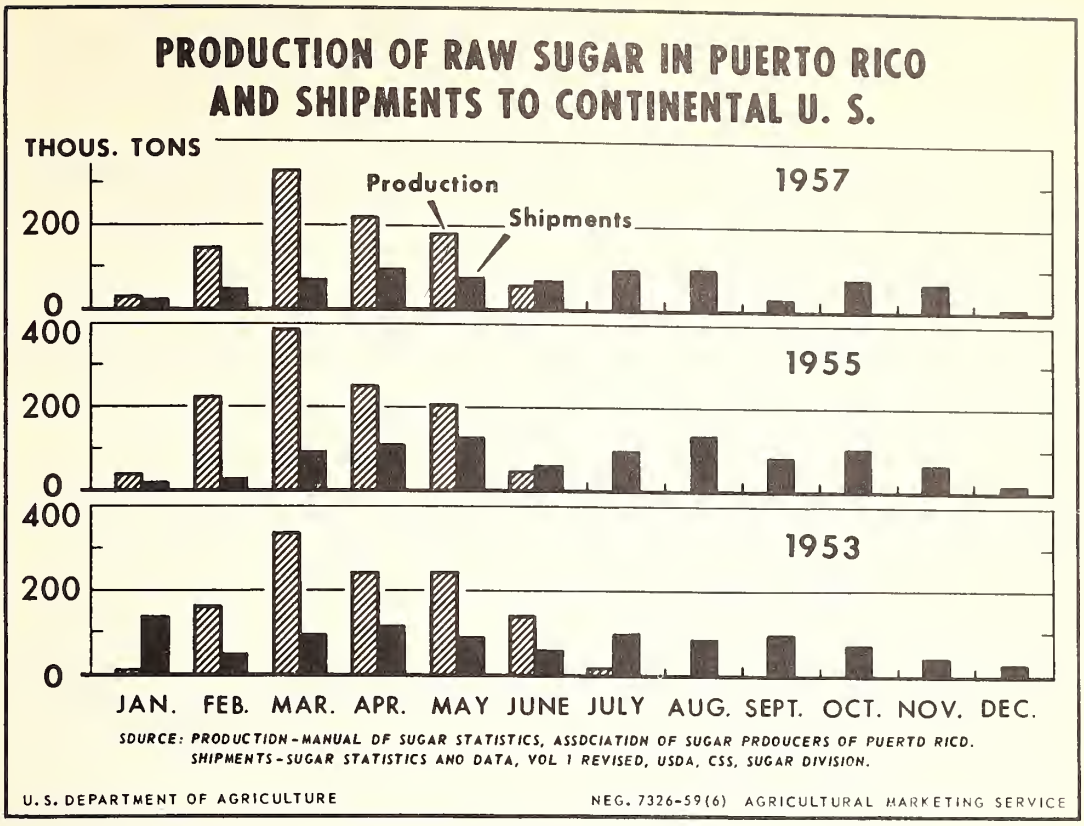


Figure 1

Many of the mills contracted early in the season to sell most of their production at the average price to a refiner or an operator. The mills stored this sugar until the refiner or operator needed it and arranged delivery. The buyer usually had considerable freedom in deciding the schedule for having the sugar shipped. Some mills required that a certain quantity be shipped each month during the production season, because they lacked storage space.

Raw sugar was stored at the mills, although about 2 weeks' to a month's supply of stock was carried at the refineries. The raw sugar stocks held by refiners were somewhat lower in January, February, and March in all years than in the remainder of the year (fig. 2). Refiners began to increase both raw and refined sugar stocks in the March and April periods.

The mills bore the storage costs on the stocks of raw sugar until they were shipped. Although an operator or a refiner might contract to buy the entire output from a mill early in the year, to be delivered throughout the year, title did not pass to the buyer until the sugar was loaded on a vessel at a port in Puerto Rico. Payment was made after the sugar was delivered to the refinery.

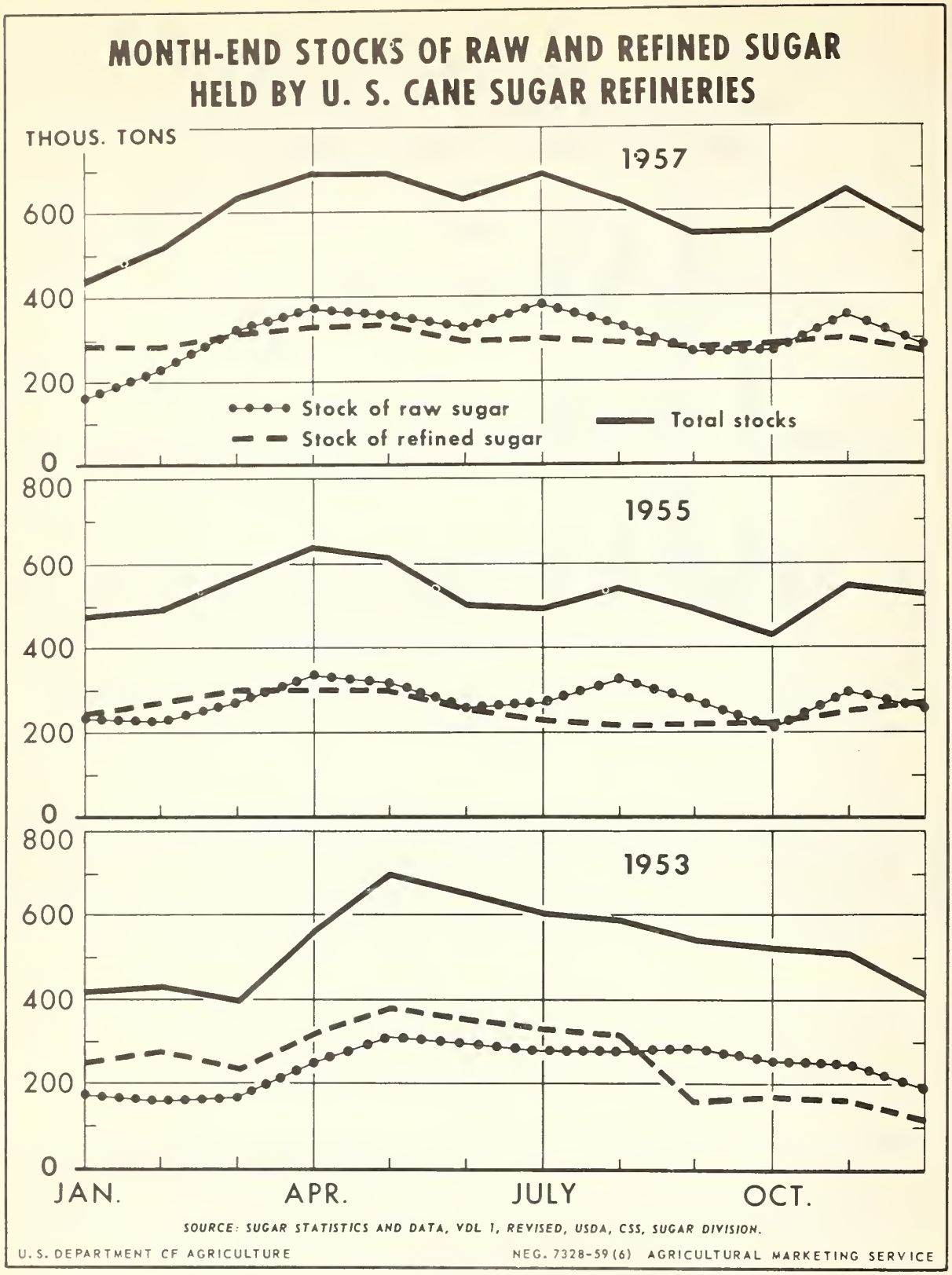
MONTH-END STOCKS OF RAW AND REFINED SUGAR
HELD BY U. S. CANE SUGAR REFINERIES
THOUS. TONS
1957
1955
1953
600
400
200
0
800
Stock of raw sugar
Stock of refined sugar
Total stocks
JAN.
APR.
JULY
OCT.
SOURCE: SUGAR STATISTICS AND DATA, VOL 1, REVISED, USDA, CSS, SUGAR DIVISION.
U.S. DEPARTMENT OF AGRICULTURE
NEG. 7328-59 (6) AGRICULTURAL MARKETING SERVICE

Figure 2

Storage capacity in Puerto Rico was not sufficient for all the raw sugar produced. The average storage capacity of nine of the mills in Puerto Rico was only 59 percent of the annual production (table 3). Storage capacity at the mills varied from 22 to 94 percent of their annual production. Much of the sugar was shipped without going into storage.

Table 3.--Raw sugar storage capacities of 9 mills in Puerto Rico, 1957 1/

| Mill number 2/ | Percent of production which can be stored |
|---|---|
| 1 | 50 |
| 2 | 82 |
| 3 | 26 |
| 4 | 22 |
| 5 | 47 |
| 6 | 90 |
| 7 | 33 |
| 8 | 83 |
| 9 | 94 |
| Average | 59 |

1/ Storage capacities include both bag and bulk warehouses.
2/ Arranged according to tons produced, largest mills first.

Handling raw sugar in bulk, a relatively new practice, is a change intended to reduce the marketing cost, primarily to the mills. Fewer and larger bulk shipments are made from each mill, since there is usually considerably greater tonnage in a bulk shipment than in a bagged shipment. Also, sugar from fewer mills can be pooled to make a bulk shipment. It is difficult, if not impossible, to retain identity of sugar in bulk. Formerly, the bags from each mill were marked so that sugar from several mills in a shipment could be identified. In bulk, the output of several raw sugar mills is handled and marketed at the terminal as a homogeneous lot.

Some of the smaller mills may only make two or three shipments of bulk sugar in a year, whereas they probably would have made six or seven shipments of sugar had it been in bags. By distributing the six or seven sales throughout the year at committed prices, the mill would likely receive for all its sugar something near the annual average price. If only two or three sales were made, the average of the prices received would not likely be as close to the annual average. Good luck or judgment might mean that the mill could profit on marketing colono sugar, but the opposite might be true. The ability of the mill to withstand a loss in marketing sugar for a year or more with the hope of doing better in later years is an important factor in determining whether it will choose to sell at an average price or at committed prices.

## Marketing Channels

Centrals sell raw sugar directly to refiners, through their own sales organization or through brokers, or to operators who resell to refiners.

Brokers sell on a commission, usually one-fourth or three-eighths of a percent of the selling price. They keep their clients informed of the condition of the market and the factors affecting it, such as crops and weather in other areas, the futures market, political activities, the refined sugar market, and raw and refined prices. The broker also handles the details of the sales and the moving of sugar to the mainland. The broker may charter the vessel, arrange for insurance, and appoint weighers, samplers, and chemists to assure the producers of getting fair treatment in determining the final weight and test of the sugar. The broker handles the financial details of the sale.

Operators buy raw sugar and sell it for their own accounts. They stand ready at all times to buy or sell sugar and in this way add fluidity to the market. Refiners do not always want to buy sugar. They often buy some of their supply months in advance and the rest on nearby arrivals as the need arises. The operator is a risk bearer in the market. He often is willing to buy sugar on terms or at times not satisfactory to the refiner.

There has been an increasing tendency for Puerto Rican producers to sell to operators rather than directly to refiners or through brokers. The amount purchased by operators increased from 34 percent in 1953 to 61 percent in 1956, and was 54 percent in 1957 (table 4). The increased sales to operators have been the result of their increased efforts to buy raw sugar, plus the desire of mills to sell at average prices. As an added inducement, some operators have offered premiums over the average price or have assisted mills in financing the holding of sugar in order to get sugar on terms satisfactory to the operators. Refiners also buy at the average price but apparently do not offer any premiums over that price or assist mills in financing the holding of sugar. The average price period and the arrangement for shipping are more important to the operator than to the refiner, because operators must be able to sell the sugar later at a price which will net them a profit. The refiners are able to buy at an average price because they are able to accept the terms of the producers, some of whom require a certain quantity of sugar to be moved during the production period, because of lack of storage space. Also, since the mills do not get payment until the sugar is delivered, generally they are anxious for the sugar to be shipped as soon as possible.

Brokers in recent years have purchased sugar for their own accounts at an average price and sold to refiners in the same manner as operators. These sales were classified as operator sales in this report. Brokers changed their method of operation because of a decrease in volume which they could sell on a commission basis. When producers sell to operators or refiners at an average price, the services of a broker are not needed.

Table 4.--Raw sugar sales from Puerto Rico, by type of buyer, 1953-57 1/

| Year | Volume sold by type of buyer | | | | Total sales |
|---|---|---|---|---|---|
| | Refiners | | Operators | | |
| | Tons | Percent | Tons | Percent | Tons |
| 1953 | 451,756 | 66 | 233,418 | 34 | 685,174 |
| 1954 | 366,729 | 54 | 313,367 | 46 | 680,096 |
| 1955 | 321,935 | 44 | 401,945 | 56 | 723,880 |
| 1956 | 188,204 | 39 | 296,866 | 61 | 485,070 |
| 1957 | 191,523 | 46 | 223,347 | 54 | 414,870 |

1/ Short tons, 96° basis.

## THE RAW SUGAR MARKET

### Characteristics of the Market

United States sugar needs are met by cane and beet sugar. Beet sugar is produced in the central and western States. Sugar beets are processed and refined sugar is produced in one continuous operation. No raw sugar is produced from beets in this country.

Cane sugar is supplied from the mainland areas of Louisiana and Florida, from Hawaii, Puerto Rico, and the Virgin Islands, and from foreign supply areas. Cuba is the major foreign supplier, and the Philippine Islands second, several other areas supplying the rest (fig. 3). Most of the sugar from the offshore domestic areas and from foreign areas enters the market as raw sugar for further refining.

Mainland sugar refineries are located mainly in the eastern seaports of Boston, New York, Philadelphia, Baltimore, and Savannah, and the Gulf Coast area of New Orleans. One refinery is on the Pacific Coast and five are inland.

New York City is the major market for raw sugar. Mill sales offices, sellers' agents, brokers, and raw sugar operators are located there. Five large refiners also are located there. In addition, the New York Coffee and Sugar Exchange, which is the organized sugar futures market, operates in the city.

Puerto Rican raw sugar is sold in competition with sugar from Cuba, the Philippines, and other foreign areas. Sugar from other domestic areas enters only indirectly into price formation in the U. S. market. The world price of raw sugar has an influence on the price of domestic raw sugar, but usually the price fluctuations in the world market are much wider than those in the U. S. price.

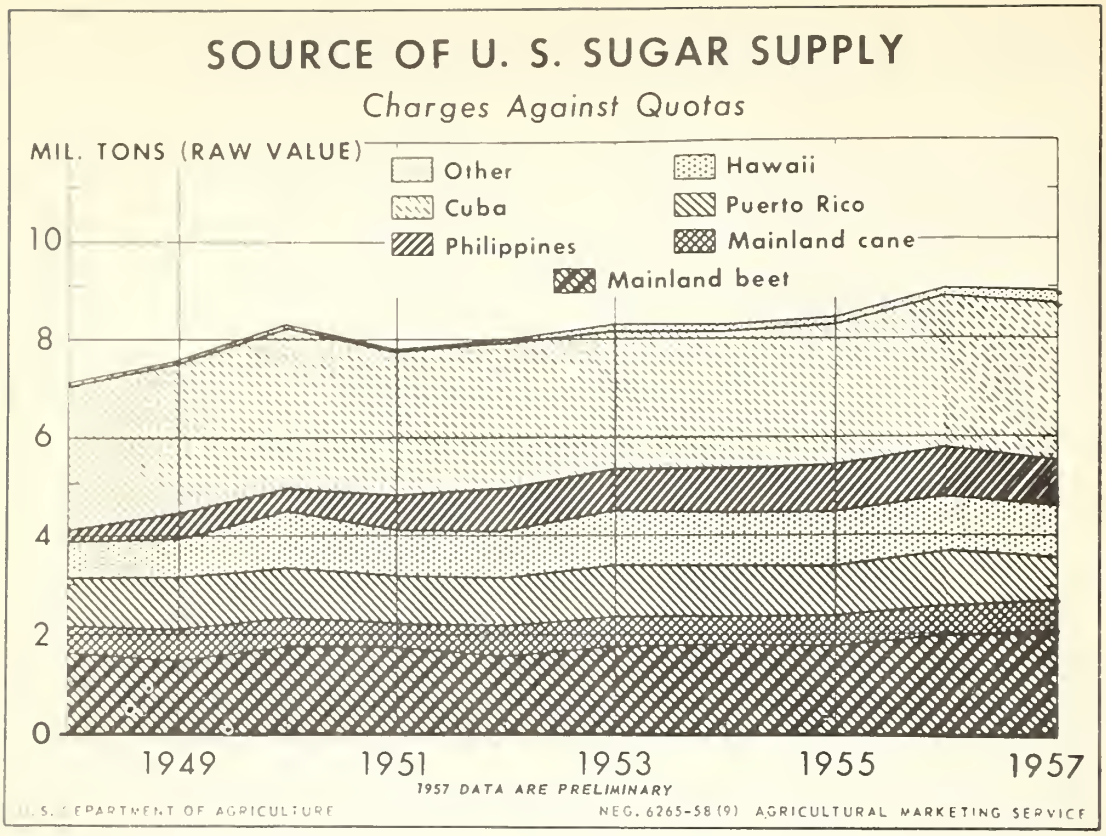


Figure 3

Most of the Hawaiian raw sugar is refined at Crockett, Calif., by a refinery which is owned by the Hawaiian sugar plantations. Any raw sugar above the needs of the California refinery is sold to a Texas refinery or goes to eastern refiners. Very little Hawaiian raw sugar enters directly into the price-making process.

Louisiana raw sugar is generally sold to nearby refineries on an average-price basis and does not enter directly into price formation. A large proportion of Florida raw sugar is refined at the Savannah refinery on a toll basis, the rest being refined by the raw sugar mill. This sugar also does not enter directly into price making.

## Influence of Ocean Freight Cost on the Markets Used

The ocean freight cost on raw sugar to U. S. ports is actually paid by the seller. The distance of the different producing areas and the freight rate structure from producing areas to the refineries influence the ability of raw sugar producers in one area to compete with producers in another area. Because of the freight rate structure, a producing area's sugar is sold to

refineries located in particular areas. Cuba has a freight advantage to the Gulf ports and Savannah, which other areas do not have. The lower price in the Gulf area reflects the lower rate from Cuba. Most of the shipments of raw sugar to the Gulf area are of Cuban origin. Puerto Rican sugar is marketed largely to refineries in the northeast, because the price there is higher, freight rates considered. Freight on Puerto Rican sugar is the same to all ports except Boston, which is usually 2 cents higher per hundredweight. Cuban freight rates also are greater to Boston by the same amount. The freight differential to Boston above that to other eastern ports is paid by the buyer. There is no difference in freight rates to any Gulf or eastern port on shipments made from the Philippines or from Hawaii. The Philippine and Hawaiian sugar sold in the open market is usually sold to the East Coast refiners, where the price is slightly higher than in the Gulf area.

In addition to ocean freight rate advantages, the facilities available for handling bulk sugar are a factor in determining where sugar is shipped. The entire Puerto Rican production is now shipped in bulk. Several refineries do not have facilities for handling bulk raw sugar. This restricts the market for Puerto Rican sugar. The number of refineries with bulk facilities is increasing, so that this does not appear to affect the choice of outlets seriously.

## Regulation of the Sugar Industry

Under the Sugar Act of 1948, as amended, the Secretary of Agriculture determines the amount of sugar needed to meet the requirements of consumers in the United States. This determination of requirements is made in December for the ensuing year and it may be revised during the course of the year. The total tonnage so determined is allocated to the several domestic areas and foreign countries of supply in the form of marketing quotas, according to a statutory formula. About 11.67 percent of Puerto Rico's quota may be shipped to the mainland as "direct-consumption sugar," that is, essentially as refined sugar. The balance must be shipped as raw sugar to be refined on the mainland.

In addition to its quota for marketing sugar on the mainland, Puerto Rico has a local quota to fill its own sugar needs.

When necessary to assure orderly marketing, area quotas must be allotted to individual processors. The Puerto Rican mainland and local sugar marketing quotas were allotted to individual processors from 1949 through 1956. The direct-consumption portion of the mainland quota has been under allotment throughout the life of the Sugar Act of 1948.

To bring sugar crop production in any one domestic area into line with marketing opportunities under its quota and normal carryover requirements, the sugar crop may be restricted in terms of acreage, crop tonnage, or sugar tonnage contained in the crop. Compliance (1) with the restriction, if applicable, (2) with certain wage and employment conditions, and (3) in the case of grower-processors who buy additional sugarcane from others, with minimum price provisions is rewarded with payments to growers out of the Federal Treasury at the basic rate of 80 cents per 100 pounds of commercially recoverable sugar

contained in the growers' sugarcane. The payment rate is successively reduced as production on any one farm increases, and amounts to only 30 cents on sugar production over 30,000 short tons, raw value. It has averaged about 70 cents in Puerto Rico.

The restriction of production in Puerto Rico took the form of a limitation on the amount of commercially recoverable sugar contained in sugarcane that could be marketed. It applied to the 4 years 1953-1956.

The fair price determination under the Sugar Act pertains to the price which grower-processors must pay for sugarcane purchased from independent growers, if they wish to receive Sugar Act payments in their capacity as growers. These fair price determinations are issued annually. They provide for the sharing relationship between grower and processor.

While the quantity of sugar that is marketed is controlled, the raw sugar mills must decide where to sell, when to sell, and the method of pricing. Control over quotas and processor-farmer relationships provides the framework within which marketing decisions are made.

## PRICING PUERTO RICAN RAW SUGAR

### Pricing on the Spot Market

Sale of sugar at the current market price is referred to as a spot market sale. In such sales, the price is determined by negotiation between the buyer and seller. In 1953, slightly more than two-thirds of the sugar was sold at spot prices. The volume priced by this method decreased to 15 percent in 1955, then increased to 45 percent in 1957 (table 5). This shift was largely the result of a change by refiners to the average-price method of buying. The percent of refiner purchases at average prices increased from 9 to 67 percent from 1953 to 1955 (table 6).

Table 5.--Methods of pricing Puerto Rican raw sugar, 1953-57 1/

| Year | Volume sold, by method of pricing | | | | Total sales | |
|---|---|---|---|---|---|---|
| | On spot | | On average | | | |
| | Tons | Percent | Tons | Percent | Tons | Percent |
| 1953 | 461,278 | 67 | 223,896 | 33 | 685,174 | 100 |
| 1954 | 171,303 | 25 | 508,793 | 75 | 680,096 | 100 |
| 1955 | 108,901 | 15 | 614,979 | 85 | 723,880 | 100 |
| 1956 | 151,383 | 31 | 333,687 | 69 | 485,070 | 100 |
| 1957 | 185,641 | 45 | 229,229 | 55 | 414,870 | 100 |

1/ Short tons, 96° basis.

Table 6.--Methods of pricing Puerto Rican raw sugar, by type of buyer, 1953-57 1/

| Year | Sales to refiners | | | | Sales to operators | | | |
|---|---|---|---|---|---|---|---|---|
| | On spot | On average | Total sales | | On spot | On average | Total sales | |
| | Percent | Percent | Percent | Tons | Percent | Percent | Percent | Tons |
| 1953 | 91 | 9 | 100 | 451,756 | 22 | 78 | 100 | 233,418 |
| 1954 | 47 | 53 | 100 | 366,729 | 0 | 100 | 100 | 313,367 |
| 1955 | 33 | 67 | 100 | 321,935 | 1 | 99 | 100 | 401,945 |
| 1956 | 57 | 43 | 100 | 188,204 | 15 | 85 | 100 | 296,866 |
| 1957 | 56 | 44 | 100 | 191,523 | 35 | 65 | 100 | 223,347 |

1/ Short tons, 96° basis.

Bid and offer prices are usually made for sugar to arrive within a month, although sometimes, when there is not an immediate need for sugar, bargaining may be for sugar more than a month away.

The bid and offer prices are generally known throughout the market. Bid prices by the various refiners normally do not vary much, although sometimes a refiner may pay a few more points 3/ for sugar to arrive at a particular time. Offer prices by the various producers and operators also do not vary greatly from each other. Competition in the market compels each seller to offer sugar at about the same price.

## Average Pricing

In recent years, an increasing volume of sugar has been sold at the average of the daily spot raw sugar price quotations for some period agreed upon between the buyer and the seller. The length of the pricing period may vary widely, from 10 days to a year. From 1953 to 1955, the volume of sugar sold on an average-price basis increased from 33 to 85 percent. In 1957, more than half the sugar was sold on this basis (table 5). Negotiation for sales at average prices may be for current delivery or for delivery at later dates. The usual procedure is for the operator or refiner to contract to buy at the average price early in the year before the grinding season begins, or when the sugar is being produced, and to arrange to have the sugar delivered throughout the year.

From 1953 to 1954, the proportion of average-price sales to refiners increased from 19 to 38 percent, and the proportion to operators decreased from 81 to 62 percent. The proportion of the sugar sold at the average price which was purchased by operators and refiners did not change materially after 1954, except in 1956 when operators purchased a slightly greater share than during previous years.

3/ A point is 1 cent per hundredweight of sugar.

The volume of Puerto Rican raw sugar purchased by operators at average prices increased from 26 percent of the total sales in 1953 to 55 percent in 1955, but dropped to 35 percent in 1957 (table 7). Three operators accounted for over 90 percent of the average-price purchases from 1953 to 1955 and 99 percent in 1956 and 1957. One operator increased his purchases at average prices and accounted for about two-thirds of the average-price purchases by operators in 1956 and 1957.

Table 7.--Puerto Rican raw sugar sales at average prices to operators, 1953-57 1/

| Year | Percentage sold to each operator | | | | Average sales to operator | Proportion of total sales 2/ |
|---|---|---|---|---|---|---|
| | Operator A | Operator B | Operator C | All other operators | | |
| | Percent | Percent | Percent | Percent | Tons | Percent |
| 1953 | 37 | 35 | 19 | 9 | 181,723 | 26 |
| 1954 | 44 | 37 | 11 | 8 | 313,367 | 46 |
| 1955 | 24 | 50 | 23 | 3 | 398,625 | 55 |
| 1956 | 6 | 68 | 25 | 1 | 251,836 | 52 |
| 1957 | 9 | 66 | 24 | 1 | 145,431 | 35 |

1/ Short tons, 96° basis.
2/ Sales to operators at average prices as percent of all Puerto Rican raw sugar sales.

The centrals normally sell all, or almost all, sugar by one method rather than a few shipments at spot prices and a few at average prices. The usual practice when selling at average prices is to contract to sell the entire output at an average price based on periods of 8 to 12 months. The contract is usually made early in the grinding season. The buyer usually has considerable leeway in determining the time the sugar will be shipped, except that he may be required to take a certain amount during the grinding season so that the centrals will have adequate storage space available.

## Length of Price Periods

In recent years, there has been a trend to base average-price sales on longer periods (table 8). After 1954, there were relatively few average-price sales based on periods of 3 months or less. Some of the average-price sales based on periods less than 1 month are sales made at 10-day average prices, the day of arrival of the ship being the fifth or sixth day of the period. Averaging prices over a period of time tends to minimize price risk to the central. The shorter the average price period, the greater the possibility of wide price swings or seasonal movement of prices that influence the price received by the central.

Table 8.--Puerto Rican raw sugar sales at average prices, by length of price period, 1953-57 1/

| Months in price period | Volume sold in price period | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1953 | | 1954 | | 1955 | | 1956 | | 1957 | |
| | Tons | Pct. | Tons | Pct. | Tons | Pct. | Tons | Pct. | Tons | Pct. |
| Less than 1 | 12,482 | 6 | 21,023 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 19,018 | 8 | 30,492 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 9,467 | 4 | 40,695 | 8 | 6,099 | 1 | 0 | 0 | 0 | 0 |
| 3 | 15,453 | 7 | 8,918 | 2 | 8,300 | 1 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 38,790 | 8 | 0 | 0 | 43,647 | 13 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 77,958 | 13 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 40,404 | 12 | 0 | 0 |
| 8 | 0 | 0 | 60,419 | 12 | 136,060 | 22 | 14,318 | 4 | 75,602 | 33 |
| 9 | 8,448 | 4 | 43,398 | 8 | 50,785 | 8 | 137,849 | 41 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 33,300 | 6 | 0 | 0 | 22,931 | 10 |
| 11 | 22,062 | 10 | 20,958 | 4 | 19,276 | 3 | 2,580 | 1 | 25,767 | 11 |
| 12 | 136,966 | 61 | 244,100 | 48 | 283,201 | 46 | 94,889 | 29 | 104,929 | 46 |
| Total | 223,896 | 100 | 508,793 | 100 | 614,979 | 100 | 333,687 | 100 | 229,229 | 100 |

1/ Short tons, 96° basis.

The sugar sold at average prices based on periods of 1 or 2 months or less usually is sold for delivery in the near future and in competition with sugar being offered in the spot market. Although this sugar may not have a direct part in establishing the spot price, since it is not sold at a definite committed price, the presence of it in the market, as the owner bargains for its sale and the filling of a need of a refiner, has an indirect bearing on price. If the sugar is sold at the average price for a period of several months, for delivery much later at the discretion of the buyer, it may have little direct influence on the prices in the market.

There was a shift from 1953 to 1957 to base average prices on periods of 6 months or more by both operators and refiners (table 9). Operators did not substantially increase the quantities of sugar they purchased at average prices based on 10- to 12-month periods, but did increase considerably their purchases at average-price periods of 7 to 9 months. The nearer the average-price period on which mills sell sugar corresponds to the 12-month period at which they buy sugar from the colonos, the less the price risk. When the periods are the same, the price risk is eliminated or reduced to a minimum.

## RAW SUGAR PRICES

Domestic raw sugar prices are the result of the interplay of many complex supply and demand forces. Some of these are: Total U. S. quota and its distribution among the several supply areas, production in the supply areas and their ability to supply the quota, total Cuban supply, and world supply.

Price behavior is described and an analysis of prices received is presented to provide to raw sugar producers a basis for comparing and evaluating their methods of selling sugar.

### The Spot Raw Sugar Price Quotation

The spot price quotation is established by the New York Coffee and Sugar Exchange for settlement purposes in case of defaults of delivery on futures contracts. Although primarily intended for use in settlement of exchange transactions, the price quotation has wide use in the industry. The quotation is used widely in determining an average price for the settlement between raw sugar mills and sugarcane producers for cane delivered to the mills. It is also used extensively by raw sugar mills and buyers of raw sugar in arriving at prices, by averaging the quotations over some particular period.

The spot quotation for the domestic raw sugar market is established on each business day at 2:00 p. m. by a special committee of the New York Coffee and Sugar Exchange. The purpose is to name a price which represents the value of sugar for the day, for purposes of settlement of contracts. The committee consists of five members. Two of the members generally are selected from the refiner members of the exchange and represent the buyers' viewpoint, and three generally are selected from the importing firms or brokerage firms and represent the sellers' viewpoint. The committee does not follow rigid rules or formulas in establishing the spot price quotation. The quotation is usually

Table 9.--Raw sugar sales from Puerto Rico, by length of average-price period and by type of buyer, 1953-57

| Year and length of average-price period | Sugar sales | | | | | |
|---|---|---|---|---|---|---|
| | To refiners | | To operators | | Total | |
| | Tons | Percent | Tons | Percent | Tons | Percent |
| 1953 | | | | | | |
| 3 months and under | 33,725 | 60 | 22,695 | 40 | 56,420 | 100 |
| 4 to 6 months | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 to 9 months | 8,448 | 100 | 0 | 0 | 8,448 | 100 |
| 10 to 12 months | 0 | 0 | 159,028 | 100 | 159,028 | 100 |
| Total | 42,173 | 19 | 181,723 | 81 | 223,896 | 100 |
| 1954 | | | | | | |
| 3 months and under | 81,213 | 80 | 19,915 | 20 | 101,128 | 100 |
| 4 to 6 months | 38,790 | 100 | 0 | 0 | 38,790 | 100 |
| 7 to 9 months | 0 | 0 | 103,817 | 100 | 103,817 | 100 |
| 10 to 12 months | 75,423 | 28 | 189,635 | 72 | 265,058 | 100 |
| Total | 195,426 | 38 | 313,367 | 62 | 508,793 | 100 |
| 1955 | | | | | | |
| 3 months and under | 0 | 0 | 14,399 | 100 | 14,399 | 100 |
| 4 to 6 months | 59,576 | 76 | 18,382 | 24 | 77,958 | 100 |
| 7 to 9 months | 7,021 | 4 | 179,824 | 96 | 186,845 | 100 |
| 10 to 12 months | 149,757 | 45 | 186,020 | 55 | 335,777 | 100 |
| Total | 216,354 | 35 | 398,625 | 65 | 614,979 | 100 |
| 1956 | | | | | | |
| 3 months and under | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 to 6 months | 41,447 | 95 | 2,201 | 5 | 43,647 | 100 |
| 7 to 9 months | 40,404 | 74 | 152,167 | 26 | 192,571 | 100 |
| 10 to 12 months | 0 | 0 | 97,469 | 100 | 97,469 | 100 |
| Total | 81,851 | 25 | 251,836 | 75 | 333,687 | 100 |
| 1957 | | | | | | |
| 3 months and under | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 to 6 months | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 to 9 months | 60,867 | 81 | 14,735 | 19 | 75,602 | 100 |
| 10 to 12 months | 22,931 | 15 | 130,696 | 85 | 153,627 | 100 |
| Total | 83,798 | 37 | 145,431 | 63 | 229,229 | 100 |

based on the last known sale, but the bids and offers and the prices of the nearest active futures month also are considered. The spot price established is based on bona fide sales in the actual market, or the bona fide bid price for raw sugar in the market if the bid price is higher than the last known sale, or the bona fide offered price of raw sugar in the market if the offer price is less than the last known sale of raw sugar. Since sales are sometimes concealed, transactions may take place above or below the spot quotation, which would have no effect on the spot quotation unless one of the parties to the transaction were also a member of the spot price committee. The spot price

committee represents wide interests in the industry, and therefore knows of most sales. Sometimes an offer or bid may be made to a member of the committee in an attempt to influence the spot price quotation. If this bid or offer is not made public and open to all possible buyers and sellers, it is not considered a legitimate bid or offer and therefore is not considered in establishing the spot price. A bid or offer made after 12:30 p. m. may be disregarded by the committee.

There is at times some difficulty in naming a price for raw sugar for the day, due to lack of information on all sales. Sales may be made later during the day, after the quotation is named, at a price different from the quotation, in a changing market. Generally, though, sugar sales take place at a particular price level during the day, and the price sometimes does not change for several days.

Information on the spot market is obtained by brokers and traders through their contacts and reciprocal postings. Transactions are not recorded except by the individuals concerned, and details of these transactions may not be readily available to the public. Several brokers regularly publish market news reports, giving spot and futures prices on the exchange and other market information.

The purpose of concealing sales usually is to avoid influencing the market. The policy of brokers in the market varies as to the information made public. One broker reported publishing all reliable information coming to his attention unless secrecy is imposed by principals or by the persons supplying the information. If the same information comes from another source without a request for secrecy, the company publishes it.

The spot price quotation is the price for raw sugar of 96° polarization, deliverable on the exchange, reasonably expected to arrive within 35 days. Most raw sugar produced today is higher than 96° polarization. The price paid in the market on individual shipments is adjusted for polarization. For sugar with a polarization greater than 96°, the price is increased by standard increments for each degree or fraction thereof over 96 up to 98, or is decreased by standard increments for each degree or fraction thereof under 96°. A few buyers offer premiums for bulk sugar above 98°. No sugar is delivered under 93° unless the buyer and seller previously agree on discount terms.

## Fluctuations of the Daily Spot Raw Sugar Price Quotation

### Range of the Price Changes

During 1948, 1950, 1951, and 1952, quoted prices of raw sugar fluctuated more widely than in later years (fig. 4). The price in these years varied about 1 cent per pound, or approximately one-sixth of the average value. The price stabilized somewhat after 1952. From 1953 to 1957, the annual range varied from 1/3 cent per pound in 1955 to 2/3 cent in 1956. In 1953, 1954, and 1957, the ranges were about $\frac{1}{2}$ cent per pound. From 1953 through 1957, the annual ranges varied from about 1/10 to about 1/20 of the average value.

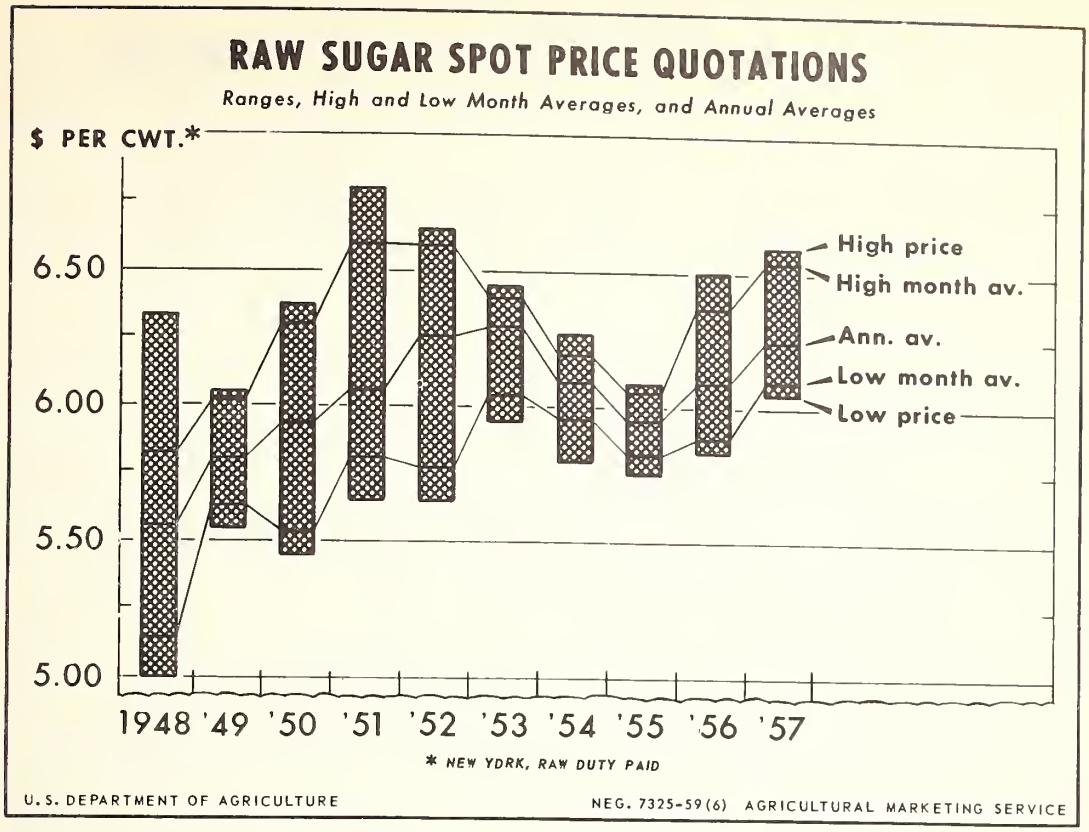


Figure 4

In general, the price fluctuations were greater in October, November, and December, and the spring months of March, April, and May (table 10). There was a greater difference between the highs and lows in the spring and fall. The price was somewhat more stable during the summer. In the fall, the quantity of sugar that can be marketed within the quota becomes more limited, so that large sales or withholding of sugar from the market would likely cause wider fluctuations in price. Also, the supply of sugar may at times become limited to a few large sellers or located in a few areas, giving greater opportunity for sellers to demand their offer price by holding the supply off the market. On the other hand, some refiners may not be pressed to buy sugar, as they may have bought most of their requirements in advance.

## Seasonality of Prices

The monthly averages of raw sugar prices in May, June, July, and August were usually higher than the annual averages (fig. 5). During December, January, and February, the monthly average was usually below the annual average.

Table 10.--Range of the New York spot raw sugar price quotations per 100 pounds, by months, 1953-57

| Month | Difference between high and low prices per 100 lb. | | | | | |
|---|---|---|---|---|---|---|
| | 1953 | 1954 | 1955 | 1956 | 1957 | 1953-57 average |
| | Cents | Cents | Cents | Cents | Cents | Cents |
| January | 15 | 12 | 10 | 12 | 33 | 16 |
| February | 10 | 23 | 7 | 12 | 7 | 12 |
| March | 25 | 17 | 17 | 8 | 10 | 15 |
| April | 7 | 5 | 20 | 19 | 10 | 12 |
| May | 10 | 18 | 15 | 12 | 40 | 19 |
| June | 10 | 22 | 9 | 15 | 10 | 13 |
| July | 8 | 10 | 18 | 10 | 35 | 14 |
| August | 5 | 10 | 8 | 10 | 15 | 10 |
| September | 10 | 28 | 10 | 15 | 10 | 15 |
| October | 10 | 30 | 3 | 35 | 25 | 21 |
| November | 32 | 25 | 15 | 23 | 15 | 22 |
| December | 37 | 15 | 20 | 15 | 15 | 20 |
| Monthly average | 15 | 18 | 13 | 16 | 19 | 16 |
| Maximum range in year | 50 | 47 | 33 | 67 | 55 | 49 |

There is a wide seasonal variation in deliveries of refined sugar. Deliveries are highest during the summer, June through September (fig. 6). This is due to increased use of sugar in canning, beverages, and ice cream manufacturing. Refiners usually build up stocks of raw and refined sugar to meet the needs. This buildup in stocks comes at the time of harvest in Puerto Rico and permits a freer movement of sugar to meet the increased seasonal demand.

During the period 1953 through 1957, the monthly average of deliveries was greater than the annual average in 31 months, less in 27 months, and the same in 2 months (fig. 7). The relation of the monthly average to the annual average is of importance in the selection of periods of less than a year on which to base average prices. Fluctuation of the price within each month also is important for those who sell sugar at committed prices.

The price on approximately two-thirds of the days from 1953 through 1957 was the same as the price on the previous day (table 11). Although there were frequent 5-point changes in price, there were few changes of more than 5 points from the previous day. The next most frequent change was 2 points. There was rarely a 4-point change in price from the previous day. No relationship was found between size of change or number of price changes and the particular month in which they occurred. The relation of the daily prices to the annual average has considerable importance to raw sugar producers and operators

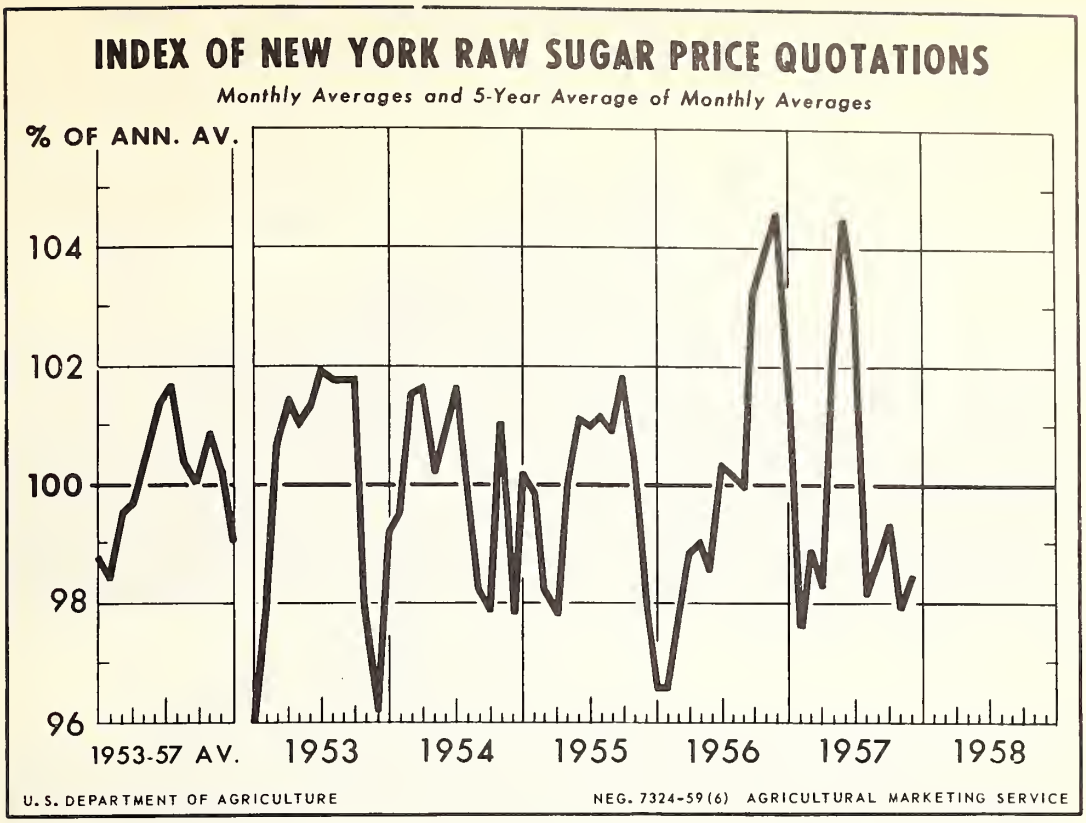


Figure 5

selling in the spot market. There was a greater chance of selling at prices above the annual average from April to September from 1953 to 1955 (table 12). In 1956 there was a greater chance of selling below the annual average in this period, and about an equal chance of selling above or below in 1957. There was a rising price trend in 1956 which influenced the distribution of prices. In all years but 1956, from October to March the daily price tended to be less than the annual average. In three complete years, there were more days above the annual average and in two years more days were below. This gives some indication of price levels throughout the year; however, much foresight and judgment is necessary to market sugar in any period if profits are to be made. Particular years may vary widely from the distribution of prices found here. The year 1956 illustrates this.

## Daily Sales of Raw Sugar

### Volume of Sales

An analysis of the daily volumes sold indicated that raw sugar sales tended to be bunched throughout the year. Large volumes of sales took place on relatively few days, while there were many days in which there were few or

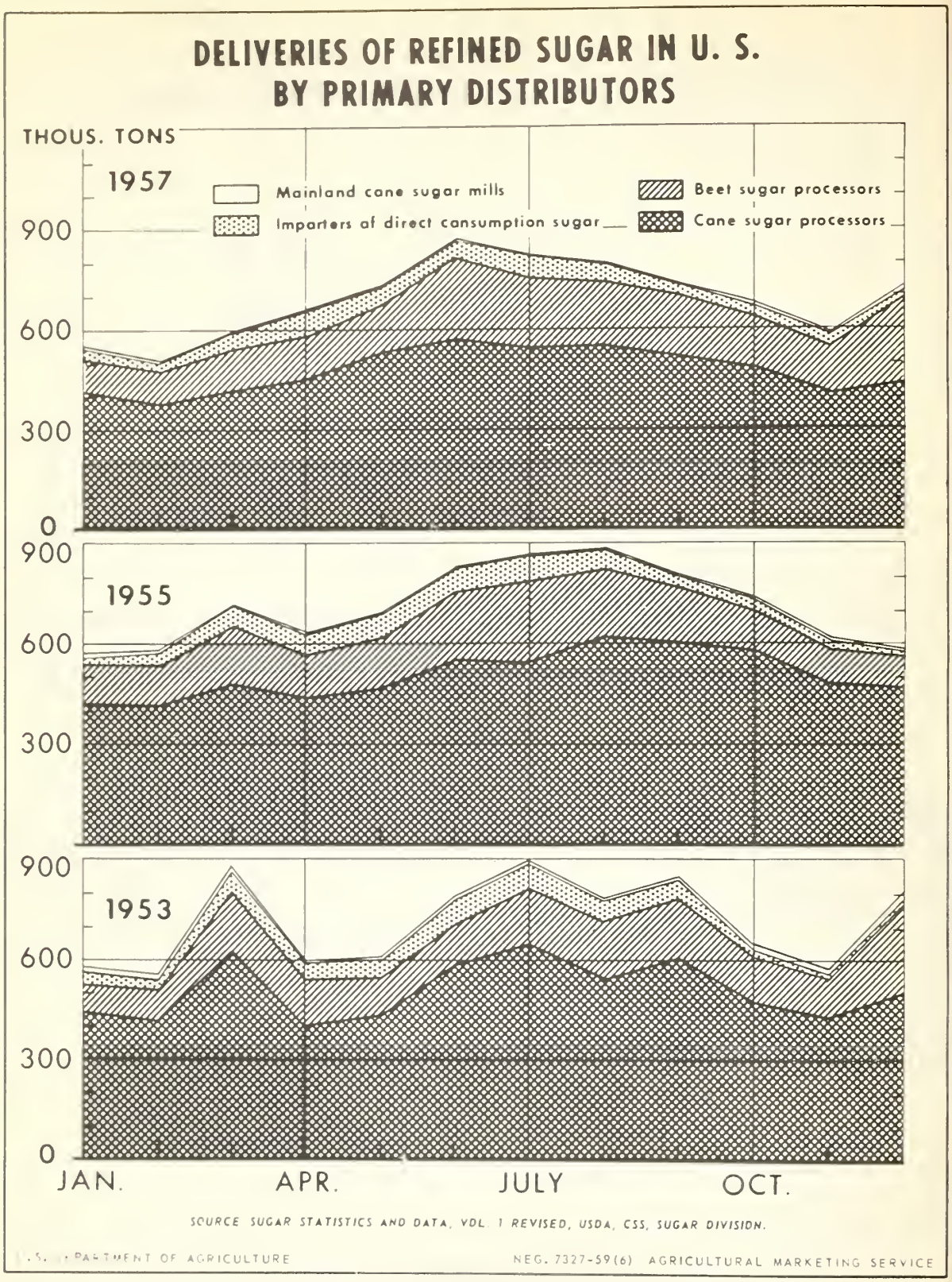
DELIVERIES OF REFINED SUGAR IN U. S.
BY PRIMARY DISTRIBUTORS
THOUS. TONS
1957
Mainland cane sugar mills
Beet sugar processors
Imporiers of direct consumption sugar
Cane sugar processors
900
600
300
0
1955
1953
JAN.
APR.
JULY
OCT.
SOURCE SUGAR STATISTICS AND DATA, VOL. 1 REVISED, USDA, CSS, SUGAR DIVISION.
U.S. DEPARTMENT OF AGRICULTURE
NEG. 7327-59(6) AGRICULTURAL MARKETING SERVICE

Figure 6

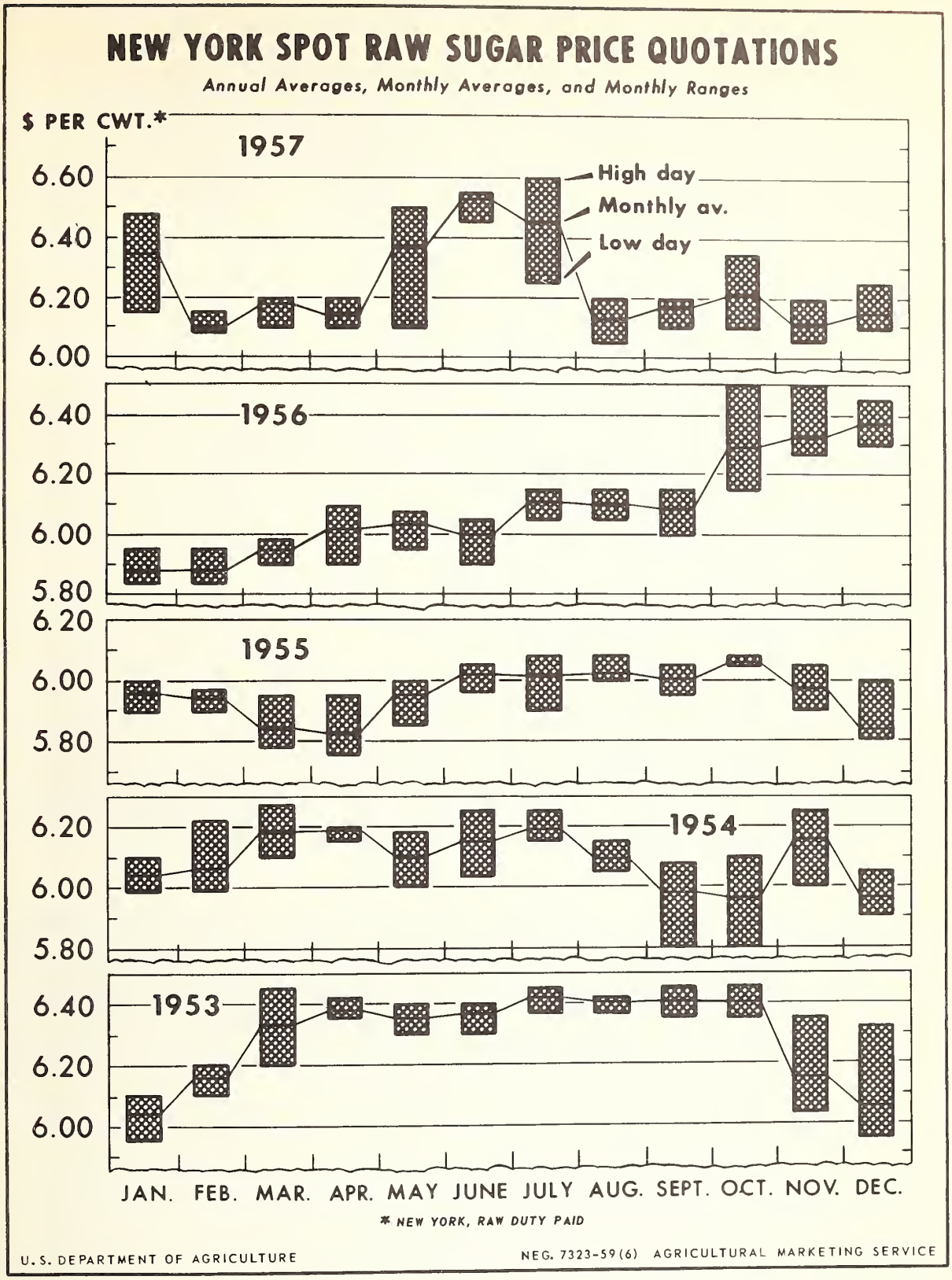
NEW YORK SPOT RAW SUGAR PRICE QUOTATIONS
Annual Averages, Monthly Averages, and Monthly Ranges
$ PER CWT.*
1957
High day
Monthly av.
Low day
6.60
6.40
6.20
6.00
1956
6.40
6.20
6.00
5.80
1955
6.20
6.00
5.80
1954
6.20
6.00
5.80
1953
6.40
6.20
6.00
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
* NEW YORK, RAW DUTY PAID
U.S. DEPARTMENT OF AGRICULTURE
NEG. 7323-59(6) AGRICULTURAL MARKETING SERVICE

Figure 7

Table 11.--Number of days the New York raw sugar spot price quotation changed, and points changed, by quarters, 5-year averages, 1953-57

| Point changes 1/ | Number of days quotation changed per year | | | | | |
|---|---|---|---|---|---|---|
| | Total days | Percent of total | Jan.-Mar. | Apr.-June | July-Sept. | Oct.-Nov. |
| | Number | Percent | Number | Number | Number | Number |
| 0 | 163 | 66 | 40 | 41 | 41 | 41 |
| 1 | 8 | 3 | 2 | 1 | 3 | 2 |
| 2 | 23 | 9 | 6 | 6 | 8 | 3 |
| 3 | 17 | 7 | 5 | 4 | 5 | 3 |
| 4 | 3 | 1 | 0 | 1 | 1 | 1 |
| 5 | 27 | 11 | 7 | 8 | 5 | 7 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 2 | 1 | 0 | 0 | 1 | 1 |
| 8 | 2 | 1 | 1 | 1 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 3 | 1 | 0 | 1 | 0 | 2 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 249 | 100 | 61 | 63 | 64 | 61 |

1/ A point change equals 1 cent per hundredweight.

no sales. This has been termed "spurt" buying of sugar. Approximately 40 percent of the sugar was sold on about 10 percent of the days, and there were no sales reported on one-third of the days (table 13). Less than 10 percent of the sugar was sold on days in which less than 5,000 tons was sold, which was about one-half the days. Large or small daily volumes of sales were not associated with any particular month or season, but occurred throughout the year.

The reported sales represented sugar that was sold primarily at committed prices, although a few average-price sales based on short periods, usually of 10 days, were reported. Large quantities of sugar sold at average prices to refiners did not enter into a bargaining or price-making position and were not reported. The sales reported represented about one-third of the sugar purchased annually by eastern and southern refiners, and are believed to represent a major portion of the sugar sold at negotiated prices in the price-making market.

Table 12.--Level of daily raw sugar spot quotations in relation to annual average of spot quotations, by period of year, 1953-57

| Period of year | Number of days quotations were above, below, or the same as annual average | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1953 | | | 1954 | | | 1955 | | |
| | Above | Below | Same | Above | Below | Same | Above | Below | Same |
| April to September | 129 | 0 | 0 | 83 | 44 | 0 | 85 | 29 | 13 |
| October to March | 42 | 80 | 0 | 49 | 73 | 0 | 41 | 51 | 31 |
| Total | 171 | 80 | 0 | 132 | 117 | 0 | 126 | 80 | 44 |

| | 1956 | | | 1957 | | |
|---|---|---|---|---|---|---|
| | Above | Below | Same | Above | Below | Same |
| April to September | 45 | 80 | 2 | 60 | 66 | 3 |
| October to March | 59 | 61 | 2 | 25 | 82 | 6 |
| Total | 104 | 141 | 4 | 85 | 148 | 9 |

A factor which could contribute to the fluctuating volume of sales from day to day is the presence of buyers in the market whose judgment is respected generally. Others who do not follow the market as closely watch these buyers, and buy their raw sugar requirements at the same time.

## Average of Quotation and Transaction Prices

The average of prices on days when sales were heaviest usually tended to be slightly higher than the average of prices on days when sales were lighter (table 13). An analysis of variance, however, did not show the difference to be statistically significant. This indicates that an annual average of price quotations weighted on the basis of the daily volume of sales would not differ greatly from the simple annual average of prices.

## Raw Sugar Sales and Price Moves

Day-to-day changes in raw sugar prices are important to those buying and selling. These changes may mean the difference between a profit or a loss to a raw sugar operator, and they have an important bearing on the profits of raw sugar producers and refiners. An analysis of day-to-day price moves and raw

Table 13.--Total reported raw sugar sales in continental United States, by quantity sold per day, short tons, 1953-57

| Tons sold per day | Sale days | | Quantity sold | | Average quantity sold per day | Average spot price quotation 1/ |
|---|---|---|---|---|---|---|
| | Number | Percent | Tons | Percent | Tons | Dollars |
| 1953 | | | | | | |
| No sales | 83 | 33 | 0 | 0 | 0 | 6.27 |
| 1-4,999 | 53 | 21 | 164,745 | 9 | 3,108 | 6.26 |
| 5,000-9,999 | 55 | 22 | 388,696 | 22 | 7,067 | 6.30 |
| 10,000-14,999 | 25 | 10 | 295,707 | 17 | 11,828 | 6.33 |
| 15,000-19,999 | 14 | 6 | 245,207 | 14 | 17,515 | 6.34 |
| 20,000 and over | 21 | 8 | 676,765 | 38 | 32,227 | 6.33 |
| Total or average | 251 | 100 | 1,771,120 | 100 | 7,056 | 6.31 |
| 1954 | | | | | | |
| No sales | 73 | 29 | 0 | 0 | 0 | 6.09 |
| 1-4,999 | 52 | 21 | 159,078 | 8 | 3,059 | 6.10 |
| 5,000-9,999 | 48 | 19 | 335,166 | 17 | 6,983 | 6.08 |
| 10,000-14,999 | 37 | 15 | 441,261 | 23 | 11,926 | 6.09 |
| 15,000-19,999 | 16 | 7 | 271,947 | 14 | 16,997 | 6.08 |
| 20,000 and over | 23 | 9 | 729,113 | 38 | 31,701 | 6.12 |
| Total or average | 249 | 100 | 1,936,565 | 100 | 7,777 | 6.09 |
| 1955 | | | | | | |
| No sales | 75 | 30 | 0 | 0 | 0 | 5.95 |
| 1-4,999 | 49 | 20 | 157,461 | 7 | 3,213 | 5.94 |
| 5,000-9,999 | 45 | 18 | 316,974 | 14 | 7,044 | 5.94 |
| 10,000-14,999 | 32 | 13 | 385,619 | 17 | 12,051 | 5.94 |
| 15,000-19,999 | 16 | 6 | 276,928 | 13 | 17,308 | 5.96 |
| 20,000 and over | 33 | 13 | 1,102,308 | 49 | 33,403 | 5.96 |
| Total or average | 250 | 100 | 2,239,290 | 100 | 8,957 | 5.95 |
| 1956 | | | | | | |
| No sales | 75 | 30 | 0 | 0 | 0 | 6.11 |
| 1-4,999 | 58 | 24 | 178,001 | 8 | 3,069 | 6.11 |
| 5,000-9,999 | 44 | 18 | 327,956 | 16 | 7,454 | 6.04 |
| 10,000-14,999 | 33 | 13 | 390,258 | 19 | 11,826 | 6.08 |
| 15,000-19,999 | 10 | 4 | 173,877 | 8 | 17,388 | 6.10 |
| 20,000 and over | 27 | 11 | 1,026,728 | 49 | 38,027 | 6.05 |
| Total or average | 247 | 100 | 2,096,820 | 100 | 8,489 | 6.10 |
| 1957 | | | | | | |
| No sales | 87 | 35 | 0 | 0 | 0 | 6.23 |
| 1-4,999 | 43 | 17 | 124,690 | 7 | 2,900 | 6.26 |
| 5,000-9,999 | 59 | 24 | 410,142 | 22 | 6,952 | 6.23 |
| 10,000-14,999 | 28 | 11 | 336,896 | 18 | 12,032 | 6.25 |
| 15,000-19,999 | 9 | 3 | 153,858 | 8 | 17,095 | 6.24 |
| 20,000 and over | 24 | 10 | 853,687 | 45 | 35,570 | 6.29 |
| Total or average | 250 | 100 | 1,879,273 | 100 | 7,517 | 6.25 |

1/ Price per hundredweight, New York, raw duty paid.

Sources: Lowry Sugar Review and Willet and Gray Weekly Statistical Sugar Trade Journal.

sugar sales shows that the total volume of sugar sold when the price moved up in most years was greater than the total volume sold when it moved down although this conclusion is based entirely on the 5-year period 1953-57 (table 14). The average quantity sold per day when prices advanced also was considerably greater than the average quantity sold per day when the prices declined.

## PRICES RECEIVED FOR PUERTO RICAN RAW SUGAR

A comparison of spot market with average-price sales indicates that in 1953, 1954, and 1957, a majority of the spot sales were made at prices above those obtained by selling on an average-price basis (table 15). In 1955, about 97 percent of the average-price sales were made at prices between $5.90 and $6.09. About 51 percent of the spot sales were in this range, and the others were below. In 1956, about 99 percent of the average-price sales were in the range of $6.00 to $6.19. About 59 percent of the spot sales were in this range, 10 percent were below, and 31 percent were above.

There was little difference between the average prices received from sales by the two methods of pricing except in 1957, when those selling in the spot market received 17 cents per hundredweight more (table 16). Eighty-one percent of the sales in 1957 made in the spot market were made at higher prices than were received by selling at average prices. The difference between averages of prices received by the two methods of selling were not statistically significant in any year. There was no significant difference between the average prices received and the average of the daily New York spot price quotations for the calendar-year periods, nor between the average prices received and the average of the quotations for the March 1 to February 28 periods.

Puerto Rican spot sales were made at the upper and lower range of prices on the New York market in all years. Prices received by producers who sold at average prices varied considerably, reflecting the different periods on which averages were based. The distribution of the spot sale prices was similar to the distribution of quoted prices in all years but 1957, when a greater percentage of the spot sales were made in the higher price ranges.

Higher spot prices do not necessarily mean higher net returns. There are some cost advantages in selling at average prices. By selling a crop at an average price, the brokers' commissions for selling individual shipments in the spot market are avoided. Operators may give premiums over the average prices in order to gain accounts. Some operators also assist in financing the purchase and holding of the sugar. Other advantages to mills in selling at the average price are that price risks are reduced and responsibilities of marketing, such as timing the sale and arranging for delivery, are assumed by the operator who buys the sugar. The raw sugar mills also are relieved of frequent market analysis and maintenance of daily contact with the market. These tasks may be partly assumed by the broker, however, when sales are made in the spot market.

Table 14.--Volume of raw sugar sold and movement of the New York raw sugar spot price quotation, 1953-57

| Year | Price moves 1/ | | | Average point move | | Total tons sold on moves | | | Tons sold per day on move | | | Tons sold per point change | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Advances | Declines | No change | Advances | Declines | Advances | Declines | No change | Advances | Declines | No change | Advances | Declines |
| | Number of days | Number of days | Number of days | Points | Points | Tons | Tons | Tons | Tons | Tons | Tons | Tons | Tons |
| 1953 | 38 | 35 | 95 | 4.0 | 3.7 | 536,760 | 417,842 | 816,518 | 14,125 | 11,938 | 8,595 | 3,531 | 3,214 |
| 1954 | 33 | 45 | 97 | 4.6 | 4.5 | 468,581 | 481,694 | 976,210 | 14,199 | 10,704 | 10,064 | 3,103 | 2,373 |
| 1955 | 38 | 36 | 101 | 3.6 | 3.3 | 697,403 | 472,593 | 1,069,294 | 18,353 | 13,128 | 10,587 | 5,090 | 4,039 |
| 1956 | 35 | 28 | 109 | 4.2 | 3.6 | 631,103 | 249,680 | 1,216,037 | 18,032 | 8,917 | 11,156 | 4,264 | 2,447 |
| 1957 | 31 | 40 | 91 | 5.4 | 4.9 | 407,555 | 325,974 | 1,130,960 | 13,147 | 8,149 | 12,428 | 2,455 | 1,655 |

1/ Only those days are considered in which there were sales. There were a few price moves without an actual sale and there were many days in which the price did not change in which there were no sales.

Sources: Lowry Sugar Review and Willet and Gray Weekly Statistical Sugar Trade Journal.

Table 15.--Distribution of Puerto Rican raw sugar sales by method of pricing, and the daily quoted prices, 1953-57

| Year | Distribution of sales or quotations by price 1/ | | | | | | | | | | Total sales or quotations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $5.70-$5.79 | $5.80-$5.89 | $5.90-$5.99 | $6.00-$6.09 | $6.10-$6.19 | $6.20-$6.29 | $6.30-$6.39 | $6.40-$6.49 | $6.50-$6.59 | $6.60-$6.69 | |
| | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. | No. |
| 1953 | | | | | | | | | | | |
| Average | | | | 4 | 7 | 65 | 24 | | | | 131 |
| Spot | | 1 | 1 | 15 | 9 | 5 | 13 | 56 | | | 152 |
| Quoted price | | | 4 | 11 | 12 | 5 | 29 | 39 | | | 251 |
| 1954 | | | | | | | | | | | |
| Average | | | 4 | 64 | 32 | 0 | | | | | 219 |
| Spot | | | 1 | 29 | 43 | 27 | | | | | 113 |
| Quoted price | | 2 | 14 | 31 | 31 | 22 | | | | | 249 |
| 1955 | | | | | | | | | | | |
| Average | | 3 | 83 | 14 | | | | | | | 189 |
| Spot | 2 | 47 | 23 | 28 | | | | | | | 43 |
| Quoted price | 5 | 18 | 30 | 47 | | | | | | | 250 |
| 1956 | | | | | | | | | | | |
| Average | | | | 12 | 87 | 1 | | | | | 130 |
| Spot | | 5 | 5 | 38 | 21 | 12 | 10 | 7 | 2 | | 42 |
| Quoted price | | 8 | 21 | 32 | 16 | 11 | 4 | 6 | 2 | | 247 |
| 1957 | | | | | | | | | | | |
| Average | | | | | | 100 | | | | | 68 |
| Spot | | | | | 14 | 5 | 5 | 71 | 5 | | 37 |
| Quoted price | | | | 3 | 42 | 22 | 10 | 10 | 12 | 1 | 250 |

1/ All prices are dollars per hundredweight, New York, raw duty paid.

Table 16.--Prices received by Puerto Rican raw sugar producers, by pricing method, and average quoted prices, 1953-57 1/

| Year | Average of prices per 100 lb. received for sugar | | Average N. Y. spot quotations | |
|---|---|---|---|---|
| | Sold on spot market | Sold on average basis | Calendar years | March 1 to Feb. 28 |
| | Dollars | Dollars | Dollars | Dollars |
| 1953 | 6.28 | 6.24 | 6.29 | 6.28 |
| 1954 | 6.13 | 6.08 | 6.09 | 6.07 |
| 1955 | 5.93 | 5.95 | 5.95 | 5.94 |
| 1956 | 6.16 | 6.13 | 6.08 | 6.14 |
| 1957 | 6.41 | 6.24 | 6.24 | 6.23 |

1/ All prices New York, raw duty paid.

## "DISTRESS" RAW SUGAR

### Prevalence of and Reasons for Distress Raw Sugar Sales

"Distress sugar" is a term used in the sugar trade to denote sugar on board a ship nearing or in port which has not been sold to a refiner. A distress sale does not necessarily mean that the sugar is sold to the refiner for less than the going price. An operator may arrange to ship sugar, then attempt to make the sale to a refiner while the sugar is afloat.

It is not desirable to store raw sugar in warehouses at mainland ports and later move it to a refinery. Storage rates are much higher on the mainland than at raw sugar mills. The sugar must be held aboard the ship until it can be unloaded at the refiner's dock. The shipper is allowed a period of time to unload, based on the weight of the cargo divided by the daily unloading rate. The shipper must pay demurrage when the ships are held over this time. The shipper is faced with either selling or paying demurrage. The seller will sometimes sell under the market price rather than pay the demurrage cost of holding the sugar on board ship. Sometimes the market value may drop as a result of availability of the distress sugar, as buyers know that the holder must sell within a specified time or pay demurrage. Also, it is more difficult for producers and operators to sell sugar when distress sugar is available.

Practically all distress sugar sales are cargoes from the Philippine Islands. Philippine producers sell a large share of their crop to operators before it leaves the islands. 4/ Refiners prefer not to purchase the sugar in the Philippines, because of price risk and the uncertainty of time of arrival.

It takes about 6 weeks for a cargo ship to sail from the Philippines to the East Coast, compared to about 4 to 7 days from Puerto Rico or Cuba. Weather

4/ Florcruz, Cenon R., "Sugar Controls and Marketing in the U. S." Sugar News, vol. 34, No. 1, pp. 13-18, Jan. 1958.

conditions influence the time of arrival of ships, and they may make stops at other ports before reaching U. S. ports. There is a problem of scheduling Philippine ships so that they will arrive at a time when they can be unloaded immediately and not at a time when other ships are being unloaded at refiners' docks. The refiners delay buying the sugar until they can determine definitely when it will arrive.

In addition to the uncertainty of arrival, there is a price risk in buying raw sugar which is at least 6 weeks away from port. The buyer could benefit if the price were to rise in the 6-week interim, but the seller would benefit if the price were to fall.

In the following analyses, distress sales were considered to be sales of any sugar while afloat that was within 7 days of arrival in port. 5/ The disposition of a shipment and the price received depend on the willingness and ability of refiners to take the raw sugar, as well as the sellers' eagerness to place the sugar. Some shipments which are more than 7 days from port may influence the market, while other shipments may have little effect although unsold and only a few days from port. The shipments averaged 3.1 days from port in 1956 to 4.4 days in 1953 and 1954 (table 17). More than one-fourth of the distress shipments during 1955 to 1957 were in port when they were sold.

Table 17.--Raw sugar distress sales and number of sales made under or over quoted prices, 1953-57

| Year | Area of origin | | Average size of sale | Average days from ports when sold | Distress sales at prices over or under quoted prices | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Philippine Islands | Other | | | Sales over | Sales under | Same price | Average points over | Average points under |
| | No. | No. | Tons | No. | No. | No. | No. | No. | No. |
| 1953 | 5 | 1 | 6,577 | 4.4 | 0 | 1 | 5 | -- | 5.0 |
| 1954 | 9 | 5 | 2,893 | 4.4 | 4 | 2 | 8 | 1.8 | 4.5 |
| 1955 | 31 | 4 | 4,100 | 3.6 | 0 | 7 | 27 | -- | 4.1 |
| 1956 | 48 | 5 | 3,424 | 3.1 | 6 | 10 | 37 | 4.2 | 4.3 |
| 1957 | 65 | 8 | 3,723 | 2.9 | 8 | 14 | 47 | 10.8 | 2.8 |

Sources: Lowry Sugar Review and Willet and Gray Weekly Statistical Sugar Trade Journal.

The number of sales of distress sugar increased each year from 6 in 1953 to 73 in 1957 (table 18). Very few distress sales were made the first 3 and the last 3 months of the year except for March of 1956 and 1957. Distress sugar was on the market most of the time from April through September. No information is available to explain this increase in number of shipments sold in

5/ Information of these sales was gained from the Lowry Sugar Review and Willet and Gray, Weekly Statistical Sugar Trade Journal.

Table 18.--Availability of distress raw sugar, by months, 1953-57 1/

| Month | 1953 | | 1954 | | 1955 | | 1956 | | 1957 | | 1953 to 1957 average | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sales 2/ | Days available 3/ | Sales 2/ | Days available 3/ | Sales 2/ | Days available 3/ | Sales 2/ | Days available 3/ | Sales 2/ | Days available 3/ | Sales 2/ | Days available 3/ |
| | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. |
| January | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 1 | 6 | 0.8 | 2.2 |
| March | 0 | 0 | 0 | 0 | 2 | 7 | 8 | 16 | 16 | 17 | 5.4 | 8.0 |
| April | 0 | 2 | 3 | 6 | 7 | 14 | 7 | 13 | 20 | 20 | 7.4 | 11.0 |
| May | 2 | 4 | 0 | 0 | 8 | 14 | 4 | 9 | 8 | 14 | 5.4 | 10.0 |
| June | 2 | 10 | 4 | 9 | 2 | 4 | 14 | 13 | 6 | 12 | 5.6 | 9.6 |
| July | 2 | 5 | 1 | 3 | 1 | 5 | 1 | 5 | 7 | 17 | 2.4 | 7.0 |
| August | 0 | 0 | 0 | 2 | 7 | 14 | 9 | 16 | 6 | 14 | 4.4 | 9.2 |
| September | 0 | 0 | 5 | 8 | 7 | 20 | 7 | 13 | 7 | 9 | 5.2 | 10.0 |
| October | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 4 | .6 | .8 |
| November | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| December | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | .2 | .6 |
| Total | 6 | 21 | 14 | 31 | 35 | 92 | 53 | 90 | 73 | 113 | 37.4 | 68.4 |
| Days available as percent of all days 3/ | -- | 8 | -- | 12 | -- | 37 | -- | 36 | -- | 45 | -- | 27.3 |

1/ Distress raw sugar was considered available 5 days prior to each sale.
2/ Number of distress sales.
3/ Does not include Saturdays, Sundays, and holidays.

this way. Five days, including weekends and holidays, were counted back from each distress sale to give the approximate number of days that distress sugar was available to buyers. In 1956, there were several more raw sugar distress sales than in 1955, but distress sugar was available to buyers about the same number of days. Distress sugar was available to buyers on almost half the marketing days in 1957, in contrast to only 8 percent in 1953.

If a sale of distress sugar has an effect on price, it will not only influence the return to the holder of the distress shipment but also the return to others selling raw sugar at the time. The price-influencing effect is felt by those selling at an average price, due to the reflection of market conditions in the daily spot price quotations. With a small amount of sugar being sold in the price-making market, distress sugar represents a greater proportion of the sugar that enters into price making.

## Influence of Distress Sugar Sales on Prices

The spot raw sugar price quotations were averaged each day for 5 days before and 5 days after the distress sales and on the day of the sales (table 19). There was some tendency for the price to fall prior to the sale and on the day of the sale in each year; however, the differences between these average prices were not statistically significant. An analysis of the price moves on distress-sale days showed that there was a greater tendency for the price to decline on distress-sale days than on all sale days (table 20). Also, there was a greater tendency for the price to advance after the distress sale was made than there was on all sale days. As the number of distress sales increased each year, there was less tendency for the price to decline on distress-sale days and gain after the sale. In 1957 the analysis indicated that distress sales had no influence on the price moves, although in this year 14 sales were made at prices under the quoted prices, which was more than in any other year (table 17).

Table 19.--Average of the New York spot price quotations preceding and following distress-sale days (price per cwt., New York, raw duty paid)

| Year | Days preceding sale | | | | | Day of sale | Days following sale | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 | 0 | 1 | 2 | 3 | 4 | 5 |
| | Dol. | Dol. | Dol. | Dol. | Dol. | Dol. | Dol. | Dol. | Dol. | Dol. | Dol. |
| 1953 | 6.36 | 6.36 | 6.37 | 6.37 | 6.37 | 6.35 | 6.36 | 6.39 | 6.39 | 6.41 | 6.40 |
| 1954 | 6.12 | 6.11 | 6.11 | 6.10 | 6.10 | 6.09 | 6.08 | 6.09 | 6.09 | 6.08 | 6.08 |
| 1955 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.94 | 5.95 | 5.95 | 5.95 | 5.96 | 5.95 |
| 1956 | 6.02 | 6.01 | 6.02 | 6.01 | 6.01 | 6.00 | 6.01 | 6.02 | 6.04 | 6.03 | 6.04 |
| 1957 | 6.22 | 6.21 | 6.22 | 6.22 | 6.22 | 6.21 | 6.21 | 6.22 | 6.23 | 6.26 | 6.26 |

Table 20.--Changes in spot raw sugar price quotation on distress-sale days and all sale days, 1953-57

| Year | Price changes on all sale days | | | | Distress price changes on distress-sale days | | | | Price changes after distress-sale days 1/ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total days | Days of advance | Days of decline | No change | Sales days | Days of advance | Days of decline | No change | Days of advance | Days of decline | No change |
| | No. | Pct. | Pct. | Pct. | No. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. |
| 1953 | 168 | 23 | 21 | 56 | 6 | 0 | 50 | 50 | 66 | 0 | 33 |
| 1954 | 175 | 19 | 26 | 55 | 14 | 7 | 50 | 43 | 29 | 21 | 50 |
| 1955 | 175 | 22 | 20 | 57 | 35 | 23 | 43 | 34 | 31 | 17 | 51 |
| 1956 | 172 | 20 | 16 | 63 | 53 | 15 | 36 | 49 | 28 | 11 | 60 |
| 1957 | 162 | 19 | 25 | 56 | 73 | 16 | 25 | 58 | 13 | 11 | 75 |

1/ Day following the distress sale.



* U. S. GOVERNMENT PRINTING OFFICE: 1960 O - 545171